WATER SECTION

GENERAL

All work shall be done in accordance with the latest editions of the American Water Works Association Standards (AWWA), and the American Society for Testing and Materials (ASTM), except as modified herein.

WATER LINES

All water lines shall be Ductile Iron (Min. Thickness Class 50) with Ductile Iron fittings and shall conform to AWWA/ANSI C151/A21.51 standards. ALL valves, valve boxes, and covers shall be as indicated in the City of Morgan Hill Standard Details.

A standard gate valve, with a brass blow–off shall be installed at the end of all dead–end lines. A 1" air relief valve must be installed at all high points in the line. Water tight plugs shall be placed at all open ends of pipes when the job site is unattended.

All water services shall be Type "K" copper tubing as shown on Detail W–1.

The concrete Contractor shall stamp a letter "W" on the face of curb directly above the water service.

All fire hydrants shall have companion valves and be of the type indicated on Detail W–8.

All water lines shall be blocked with concrete kick blocks at all changes in direction, all bends, crosses, wyes, tees, reducers, plugs, dead–ends and changes is size. Thrust block or kick block dimensions shall be based on the greater of either 150 PSI min. or 1.5 times the working pressure, while assuming a 2000 PSF soil bearing.

CLEANING AND TESTING

After installation, all pipe lines shall be flushed at 1.0 fps (main line velocity) with clean water. Lines shall be filled slowly and provisions shall be made for venting of the air. Only Department of Public Works Personnel shall open valves to the City's water system. Water lines shall be tested for tightness at the lower end of the line under a hydrostatic pressure of 150 PSI, or 50% above normal operating pressure, whichever is greater. The Contractor shall furnish all necessary equipment, labor and materials needed for the test. The test shall conform to AWWA C600 Section 4 and be conducted for at least 2 hours. See Detail W–IV for allowable leakage of ductile iron pipe.

All water lines shall be tested after completion of the trench backfill and compaction of the final base material, but prior to placement of the final roadway surface.

STERILIZATION

After pressure testing, and before putting into service, all water lines shall be chlorinated by the Contractor in accordance with AWWA C651 or as directed by the City Engineer. Chlorine is furnished by the Contractor and chlorination shall be supervised by a City Inspector.

Chlorination by placement of chlorine tablets in each section of pipe is allowed and shall be in accordance with AWWA C651 and held for a duration of 24 hours.

City of Morgan Hill Public Works Department	GENERAL NOTES	DRAWING NO.
Jim Ashcraft CITY ENGINEER — 4/1/96 DATE — 3/15/07 REVISED		W–I

MICROBIOLOGICAL TESTING

The Contractor shall provide the City with a laboratory report as to the purity of the water before acceptance by the City and placement of the new lines into service. The procedures for such tests shall be as follows:

1. The Contractor shall notify and receive approval for coliform bacteria testing from the Inspector a minimum of 48 hours prior to taking the test, and only after the water line has been hydrostatically tested, chlorinated, final flushed and passed by the Inspector.

2. All sampling and testing for the City of Morgan Hill Water System shall be performed by authorized staff from any laboratory chosen by the Contractor which is certified by the California State Department of Health Services to perform microbiological analysis of drinking water.

3. Authorized staff from the chosen certified laboratory shall take a chlorine residual test prior to taking the coliform test. Chlorine residual shall not exceed 0.3 parts per million, otherwise the coliform test shall not be taken. Flushing shall then continue until the maximum chlorine level is attained.

4. The Contractor shall submit to the Public Works Department the following items:

   A. Proof of State Department of Health Services certification for the laboratory chosen;

   B. A copy (Fax OK) of the chain–of–custody for the water sample;

   C. A copy (Fax OK) of the results of the test with an original "hard copy" to follow.

5. Upon review and approval of the items submitted in item 4., only Department of Public Works personnel shall open the necessary valves to connect the new lines to City's water system. Failure to follow the above requirement shall be considered an "unlawful connection" to the City Water System and may result in the issuing of a citation and fines as specified in Section 13.04 of the Morgan Hill Municipal Code.

6. Connections requiring shut down of the system shall be done between the hours of 12:00 Midnight and 6:00 AM, and only upon coordination with the Department of Public Works.

DUCTILE IRON

(a) Pipe. Ductile iron pipe shall conform to the requirements of AWWA C100 series. Class 50 pipe shall be the minimum allowable thickness class.

(b) Joints. All ductile iron pipe laid underground shall have push–on, mechanical, or flange joints unless approved otherwise.

(c) Lining and Coating. Water pipes shall be smooth cement lined in accordance with the requirements of AWWA C104. Polyethylene encasement wrap may be required in special soil conditions. Wrapping shall be in accordance with AWWA C105.

(d) Fittings. Fittings shall be cast iron, cement lined and coal tar pitch varnish coated of the Bell and Spigot type and shall conform to ANSI A21.10. Where a specific type of fitting is called for on the Plans, this type shall be used. Fittings shall be all bell, unless indicated otherwise on the Plans. Fitting joints shall be made up with roll–on rubber gaskets. Junctions with other types shall be made with suitable adapters or fittings. Gaskets shall be rubber.

City of Morgan Hill Public Works Department Jim Ashcraft 4/1/96 CITY ENGINEER DATE REVISED	GENERAL NOTES	DRAWING NO. W–II

DUCTILE IRON (Continued)

(e) Taps. Taps into ductile iron pipe shall be by machine. Contractor shall perform all service taps as the City does not provide this service. Hot taps to main lines will be allowed only upon approval of the City Engineer. Tapping sleeves may only be used where a water main is at least two nominal sizes larger than the proposed branch. Less than two nominal size differential may be allowed upon City Engineer approval, but will not be allowed on water mains that are not ductile iron.

VALVES

All gate valves shall meet the standards of AWWA C509. Flanged ends shall meet the requirements of ANSI B16.1, class 125. Mechanical joint ends shall meet the requirements of AWWA C111. Interior corrosion prevention coatings shall meet the requirements of AWWA C550. All valves shall be resilient wedge, non–rising stem and double O–ring equipped.

Butterfly valves shall only be used upon the direction or approval of the City Engineer and shall meet the requirements of AWWA C504.

BOLTS AND NUTS

Underground bolts and nuts shall be of low carbon steel in accordance with AWWA C141. Stainless steel bolts and nuts may be required upon direction of the City Engineer.

DEPTH

All water lines shall have a minimum of 36 inches cover at any given time, unless directed otherwise by the City Engineer.

MARKER POSTS

Contractor shall place marker posts adjacent to all air relief valves and blow off assemblies along water mains located in unimproved areas or fields. The posts shall be pressure treated redwood 4"x4"x6', painted white, buried 2'–6", and inscribed with "W/A.V." (for air relief valves) or "B.O." (for blow off assemblies), in 3 inch high carved letters painted blue.

City of Morgan Hill Public Works Department Jim Ashcraft 4/1/96 CITY ENGINEER DATE REVISED	GENERAL NOTES	DRAWING NO. W–III

ALLOWABLE LEAKAGE
FOR
DUCTILE IRON PIPE

ALLOWABLE LEAKAGE
(PER 1000 L.F.)

PIPE DIAMETER (inches)	AVG. TEST PRESSURE AT LOWEST POINT IN THE LINE– PSI						
	50	75	100	125	150	200	225
	LEAKAGE– GAL./HR.						
4	0.21	0.26	0.30	0.34	0.37	0.42	0.45
6	0.32	0.39	0.45	0.50	0.55	0.64	0.68
8	0.42	0.52	0.60	0.67	0.74	0.85	0.90
10	0.53	0.65	0.75	0.84	0.92	1.06	1.13
12	0.64	0.78	0.90	1.01	1.10	1.27	1.35
14	0.74	0.91	1.05	1.18	1.29	1.49	1.58
16	0.85	1.04	1.20	1.34	1.47	1.70	1.80
18	0.96	1.17	1.35	1.51	1.66	1.91	2.03
20	1.06	1.30	1.50	1.68	1.84	2.12	2.25
24	1.27	1.56	1.80	2.01	2.21	2.55	2.70

* DATA BASED ON THE FOLLOWING FORMULA:
PER AWWA C600 SEC. 4

$$\frac{(\text{DIA.})(\text{LENGTH})(\sqrt{\text{AVG. TEST PRESSURE}})}{133200} = \text{ALLOWABLE LEAKAGE (GALLONS / HOUR)}$$

City of Morgan Hill
Public Works Department

Jim Ashcraft
CITY ENGINEER

4/1/96
DATE

REVISED

GENERAL NOTES

DRAWING NO.
W–IV

City of Morgan Hill
Public Works Department

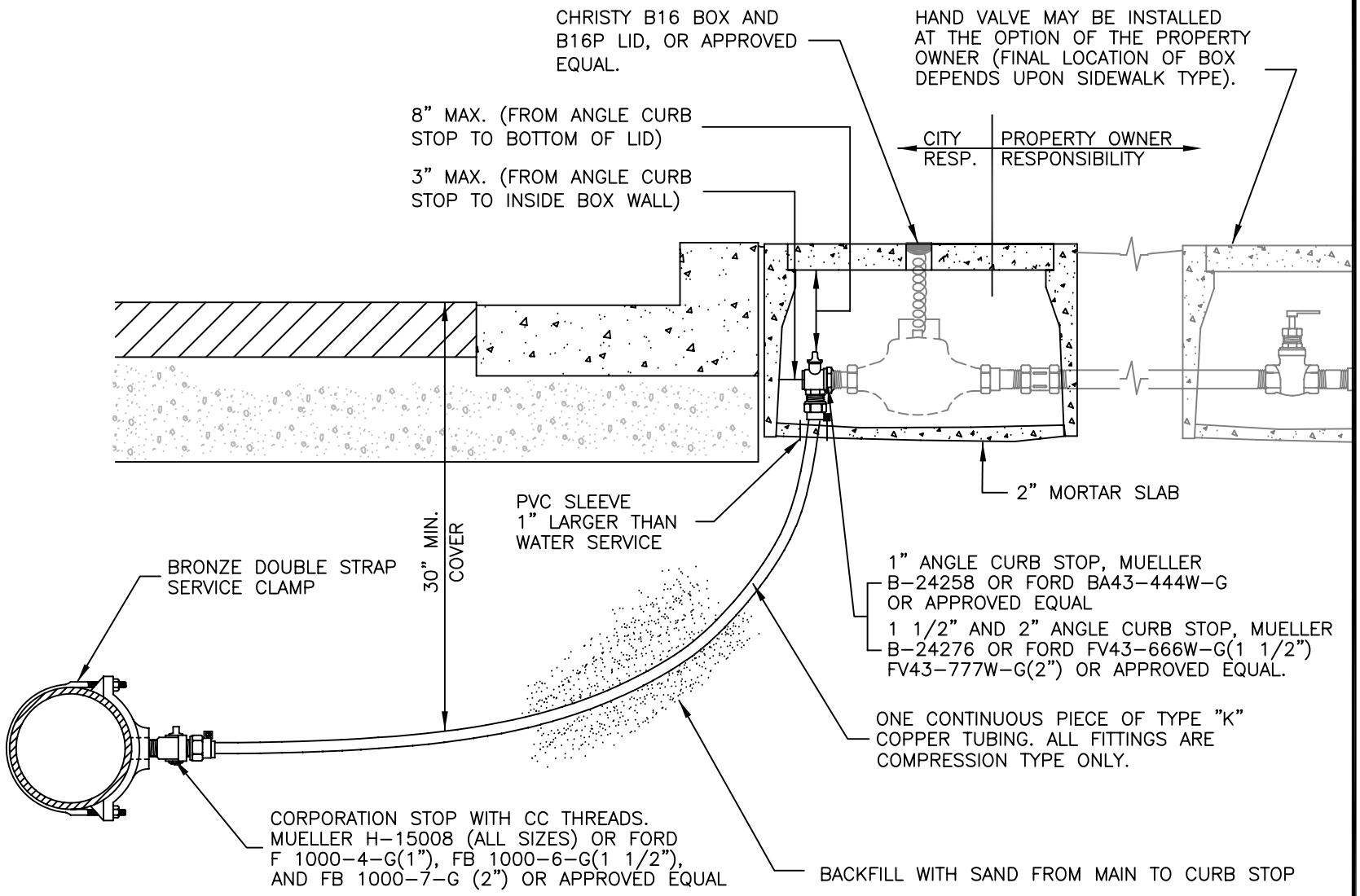
CITY ENGINEER

4/1/96
DATE

3/15/07
REVISED

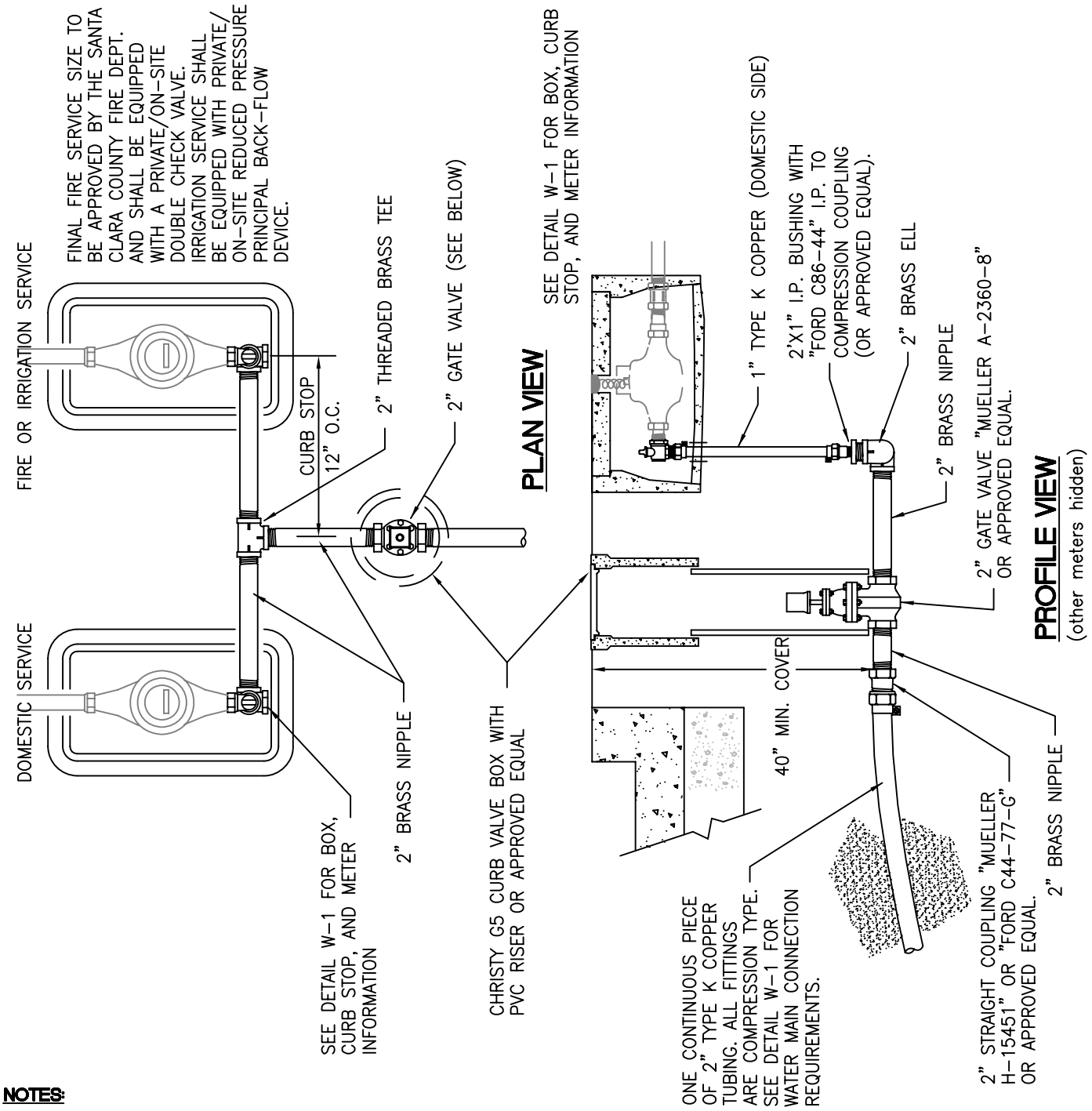
TYPICAL WATER SERVICE INSTALLATION

DRAWING NO.
W-1



NOTES:

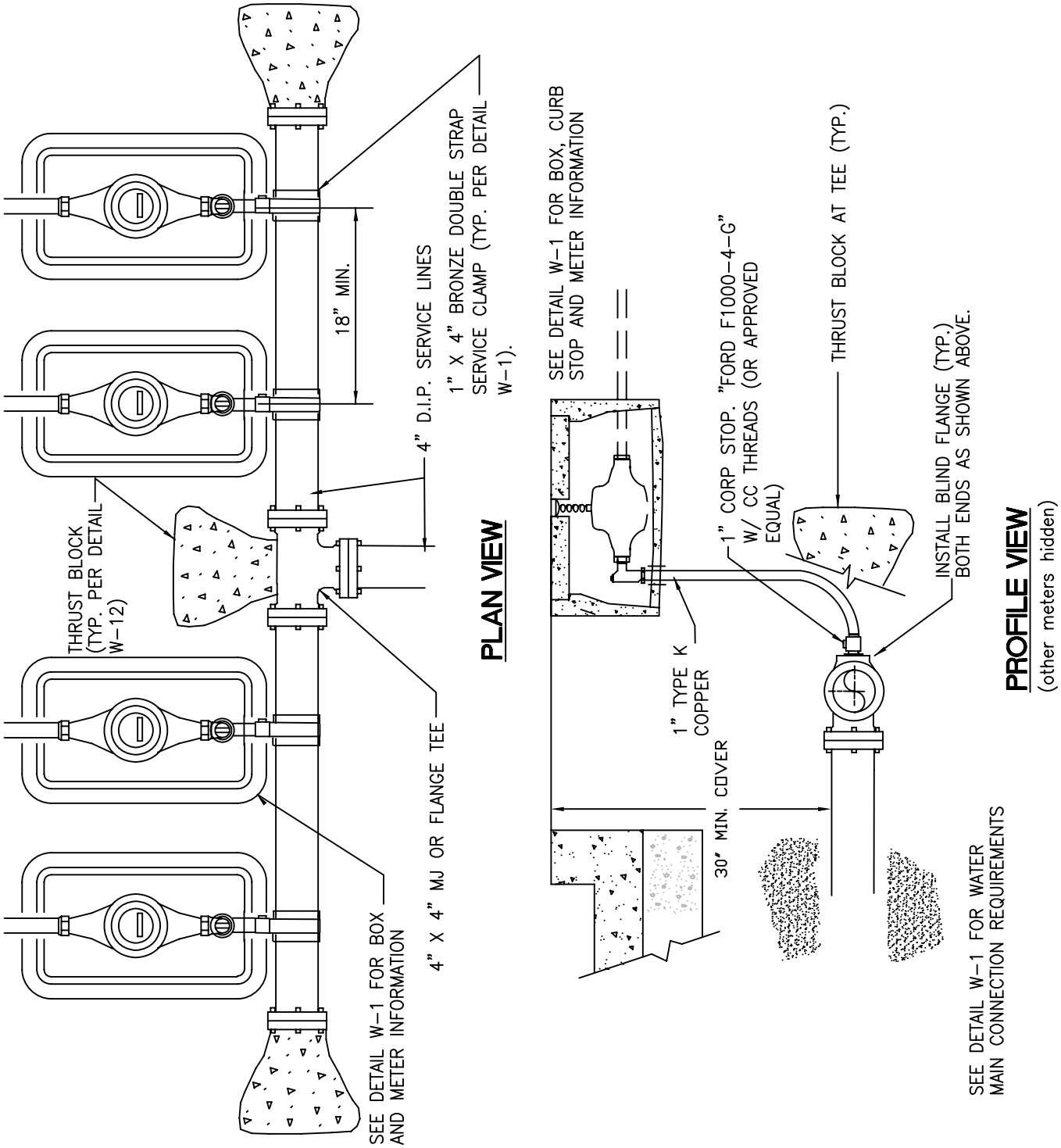
1. FOR 1" WATER METERS USE CHRISTY B-16 UTILITY BOX WITH B-16P LID OR APPROVED EQUAL (AS SHOWN). FOR 1 1/2" AND 2" METERS, USE CHRISTY CHRISTY B-36 UTILITY BOX WITH B-36P LID OR APPROVED EQUAL. FOR METERS LARGER THAN 2", SEE DETAIL W-11.
2. 1" SERVICE SIZE APPLICATION SHOWN. FOR 1 1/2" AND 2" SERVICE LINES USE "ROLL" COPPER. THE USE OF "STICK" COPPER AND REQUIRED FITTING(S) ARE NOT ALLOWED.
3. DETACHED SIDEWALK APPLICATION SHOWN. FOR ATTACHED SIDEWALK, UTILITY BOX SHALL BE MOUNTED DIRECTLY BEHIND BACK OF WALK.



NOTES:

1. STANDARD DETAIL W-1, "RESIDENTIAL WATER SERVICE" IS A PART OF THIS DETAIL, EXCEPT AS MODIFIED HEREIN.
2. THIS WATER SERVICE CONFIGURATION IS INTENDED FOR NEW CONSTRUCTION. MANIFOLDING AN EXISTING 2" SERVICE SHALL REQUIRE REMOVAL OF THE EXISTING CURB STOP AND LOWERING OF THE SERVICE LINE TO ACCOMODATE THE CONFIGURATION SHOWN. THE CORPORATION STOP AT THE EXISTING WATER MAIN SHALL BE EXPOSED (IN STREET/ RIGHT OF WAY) AND TURNED OFF TO AVOID SERVICE INTERRUPTIONS. MANIFOLDING OR RETROFITTING EXISTING 1" AND 1 1/2" SERVICES IS PROHIBITED.
3. 1" MAXIMUM FOR DOMESTIC AND IRRIGATION METERS. 2" MAXIMUM FOR FIRE SERVICES.
4. SEE DETAIL W-3 FOR MAINIFOLD CONFIGURATIONS REQUIRING MORE THAN 2 METERS.
5. DOMESTIC/IRRIGATION APPLICATIONS ARE FOR COMERCIAL AND/OR INDUSTRIAL COMINATIONS ONLY. RESIDENTIAL DOMESTIC/IRRIGATION COMBINATIONS ARE PROHIBITED.

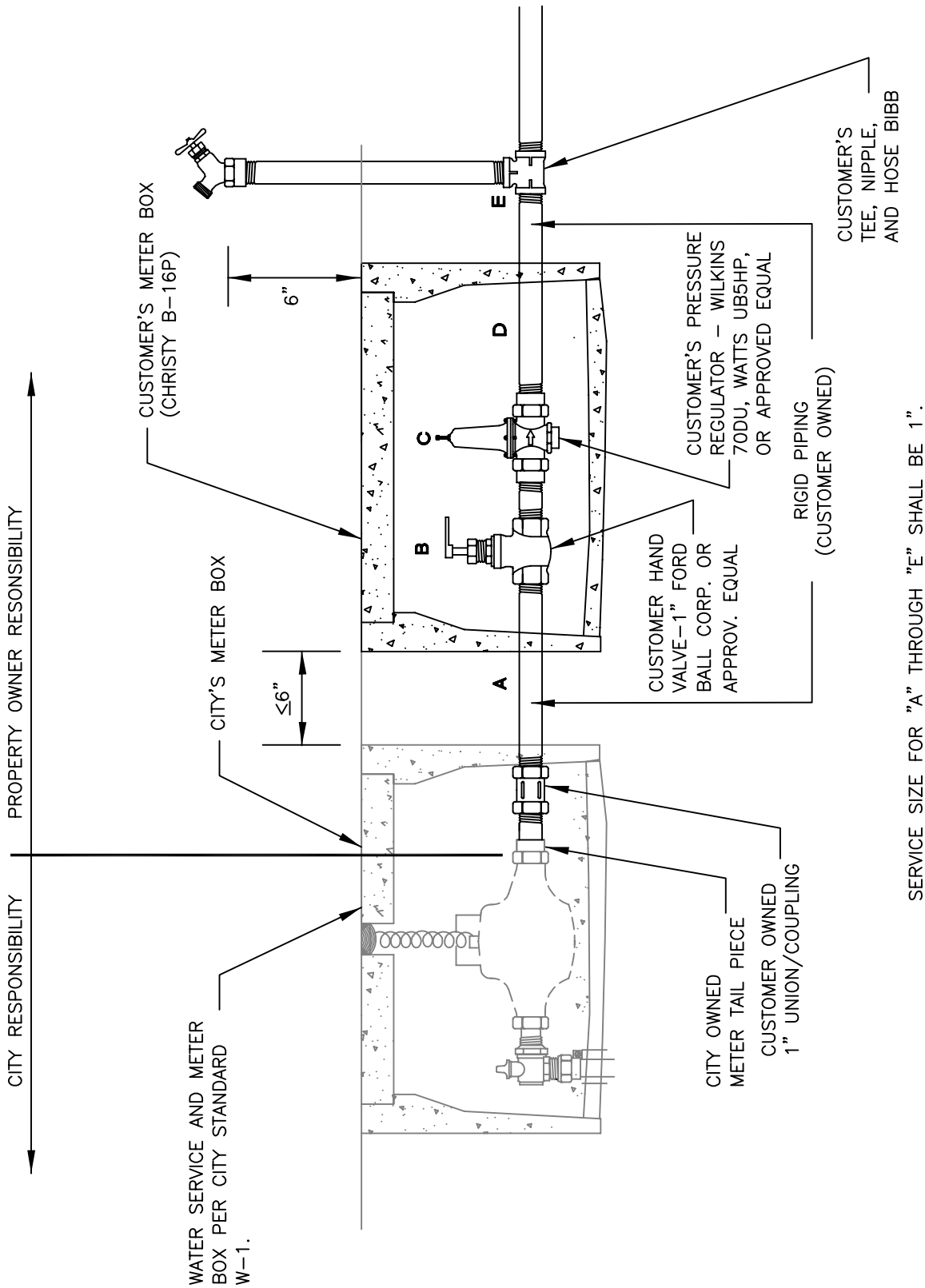
City of Morgan Hill Public Works Department	WATER SERVICE MANIFOLD FOR DOMESTIC/FIRE OR DOMESTIC/IRRIGATION (COMM./INDUST. IRRIG. ONLY)	DRAWING NO. W-2
Jim Ashcraft APPROVED — 11/08/00 DATE — 3/15/07 REVISED		



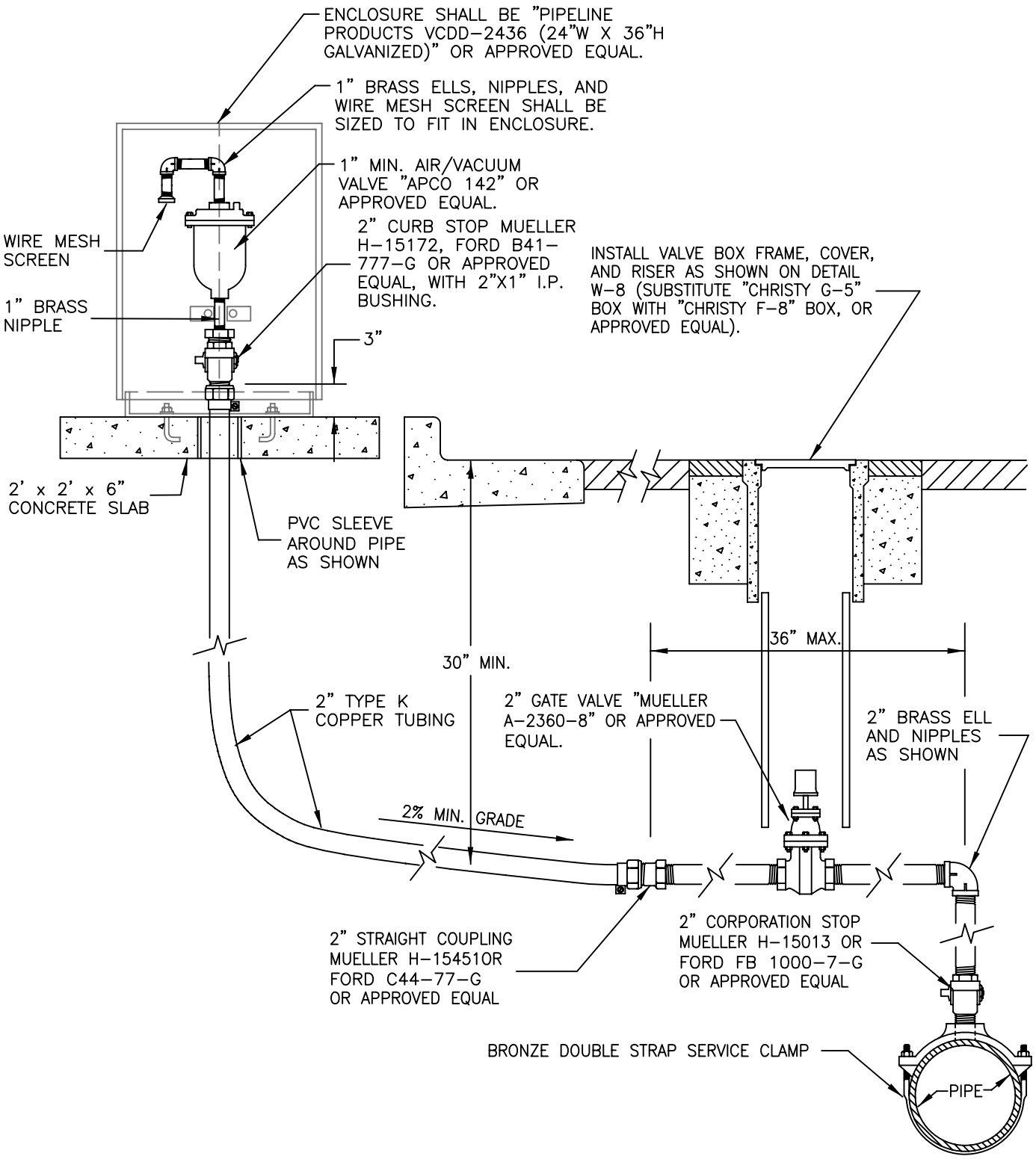
NOTES:

1. STANDARD DETAIL W-1, "RESIDENTIAL WATER SERVICE" IS A PART OF THIS DETAIL, EXCEPT AS MODIFIED HEREIN.
2. ADDITIONAL WATER SERVICES/METERS (MORE THAN 4) SHALL REQUIRE SERVICE LINE GREATER THAN 4".
3. A COMPANION VALVE (EQUAL TO PROPOSED SERVICE SIZE) SHALL BE USED AT CONNECTION OF SERVICE TO MAIN IN STREET (SEE DETAIL W-9 FOR REFERENCE).

City of Morgan Hill Public Works Department			WATER SERVICE MANIFOLD FOR 4" OR GREATER SERVICE LINE	DRAWING NO.
Jim Ashcraft APPROVED	11/08/00 DATE	3/15/07 REVISED		W-3



City of Morgan Hill Public Works Department Jim Ashcraft CITY ENGINEER — 3/15/07 DATE — REVISED	RECOMMENDED PRESSURE REGULATOR ASSEMBLY AND LOCATION FOR WATER SERVICES WITH PRESSURE ≥150 PSI	DRAWING NO. W-4



City of Morgan Hill
Public Works Department

AIR RELIEF VALVE ASSEMBLY

DRAWING NO.
W-5

Jim Ashcraft
CITY ENGINEER

4/1/96
DATE

3/15/07
REVISED

PLAN

PROFILE

(FOR SIZES 1 " TO 2" BACKFLOW UNITS SHALL BE FEBCO 825 Y OR APPROVED EQUAL)

NOTE:

1. PIPING BETWEEN BACKFLOW DEVICE AND METER SHALL BE EXPOSED FOR INSPECTION BY THE UTILITY SYSTEMS MANAGER.

FOR NOTES AND LEGEND, SEE DETAIL W-10

City of Morgan Hill Public Works Department			REDUCED PRESSURE BACKFLOW PREVENTER (SIZES 1" TO 2")	DRAWING NO.
Jim Ashcraft CITY ENGINEER	4/1/96 DATE	3/15/07 REVISED		W-6

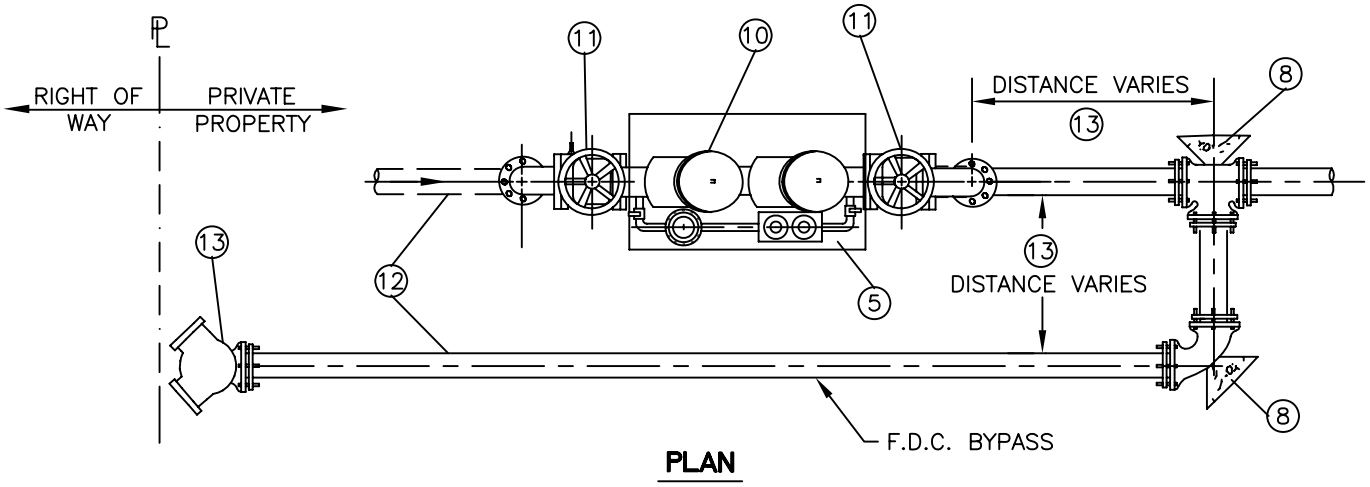
(FOR SIZES 2 1/ 2 " TO 4" BACKFLOW UNITS SHALL BE FEBCO 825 YD OR APPROVED EQUAL)

NOTES:

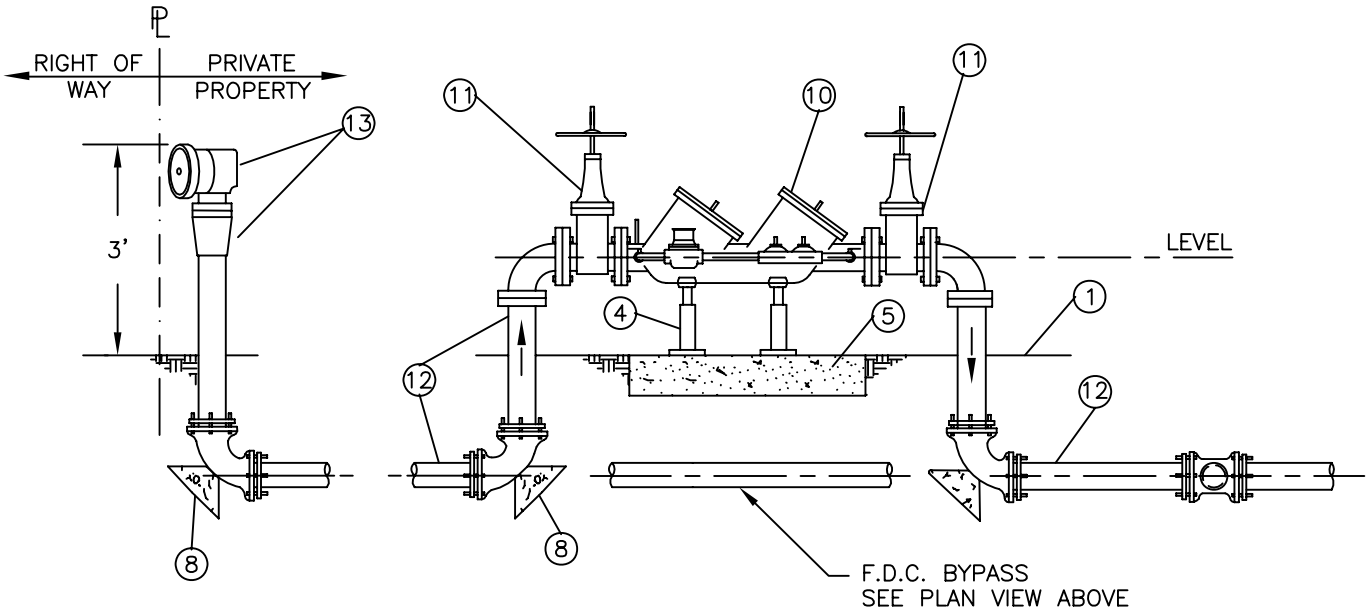
1. PIPING BETWEEN BACKFLOW DEVICE AND METER SHALL BE EXPOSED FOR INSPECTION BY THE UTILITY SYSTEMS MANAGER.
2. FOR METER SIZES GREATER THAN 2 1/2", SEE DETAILS W-9 AND W-11.

FOR NOTES AND LEGEND, SEE DETAIL W-10

City of Morgan Hill Public Works Department	REDUCED PRESSURE BACKFLOW PREVENTER (SIZES 2-1/2" TO 4")	DRAWING NO. W-7
CITY ENGINEER — 4/1/96 DATE — 3/15/07 REVISED		



PLAN



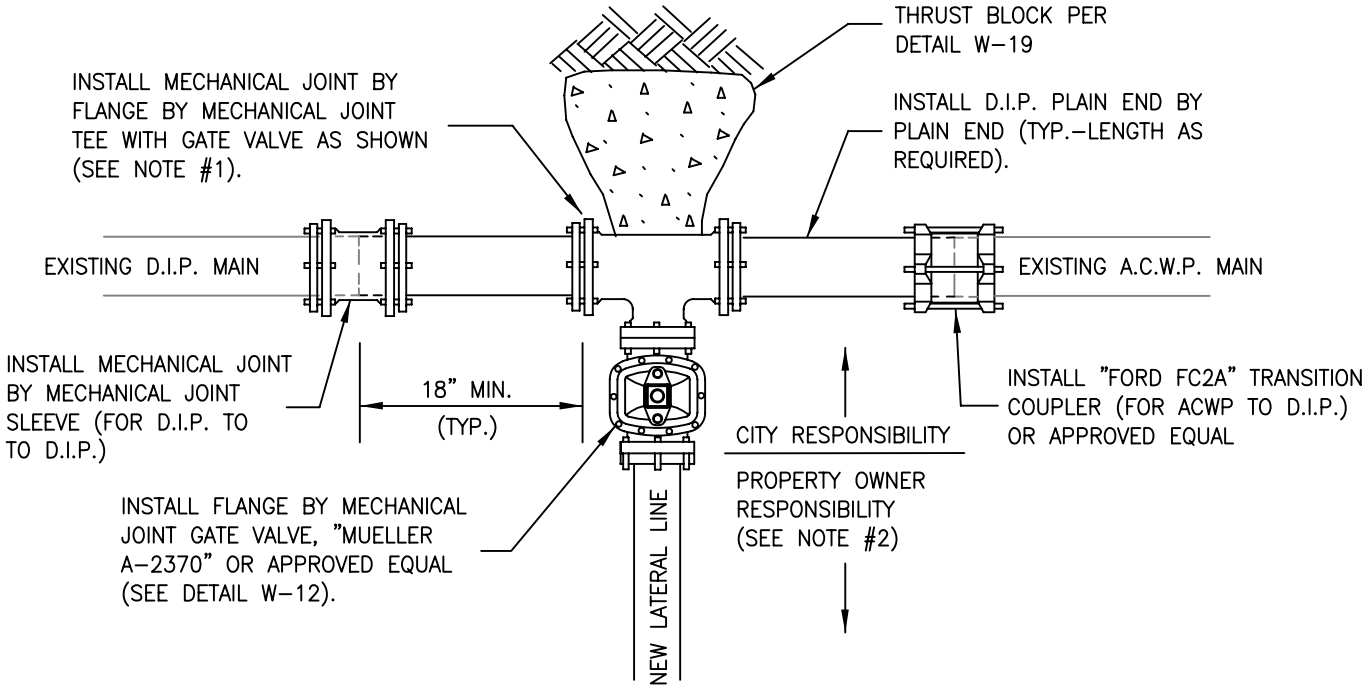
PROFILE

FOR NOTES AND LEGEND, SEE DETAIL W-10.

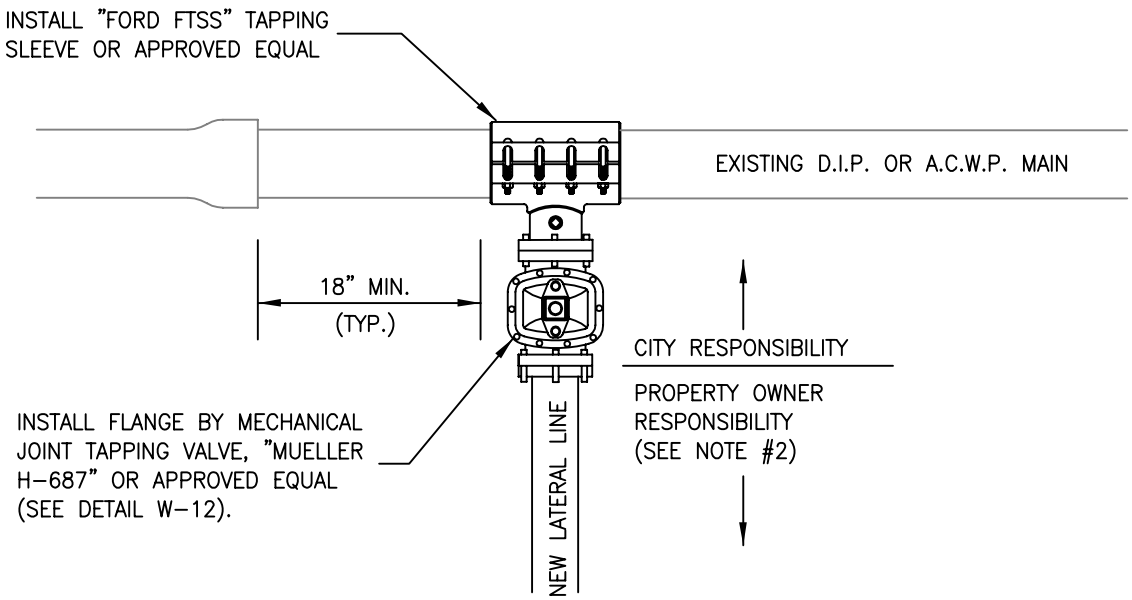
NOTES:

1. REQUESTED DEVIATIONS FROM THE F.D.C. BYPASS CONFIGURATION (IF BYPASS IS REQUIRED) ABOVE SHALL BE SUBMITTED IN THE FORM OF A PLAN AND PROFILE DRAWING AND MUST BE APPROVED BY THE CITY ENGINEER.
2. APPLICATION SHOWN IS FOR PRIVATELY MAINTAINED FIRE SERVICES, SEE DETAILS W–9 AND W–11 FOR METER (IF REQUIRED) AND CONNECTION INFORMATION.

City of Morgan Hill Public Works Department			DOUBLE DETECTOR CHECK VALVE ASSEMBLY	DRAWING NO.
Jim Ashcraft CITY ENGINEER	4/1/96 DATE	3/15/07 REVISED		W–8



"CUT-IN" TEE FOR PRIVATE LATERAL



"HOT TAP" TIE-IN FOR PRIVATE LATERAL

NOTES:

1. THE APPLICATIONS SHOWN ARE INTENDED FOR USE IN CONNECTING PRIVATE LATERALS FOR PRIVATELY MAINTAINED FIRE SERVICE LINES. METHODS OF CONNECTIONS SHOWN MAY BE USED FOR PUBLICLY MAINTAINED CONNECTIONS. REFER TO APPROVED IMPROVEMENT PLANS FOR EXACT APPLICATIONS AND CONFIGURATIONS.
2. CUSTOMER TO PERFORM TEE INSTALLATION OR TAP. THE OWNER SHALL BE RESPONSIBLE FOR THE WATER LATERAL STARTING AT THE CUSTOMER SIDE OF THE COMPANION VALVE AND ENDING AT A POINT LOCATED ON THE PRIVATE PROPERTY.

City of Morgan Hill Public Works Department	PRIVATE WATER LATERAL CONNECTIONS 4" AND GREATER	DRAWING NO. W-9
Jim Ashcraft 03/15/07 CITY ENGINEER DATE REVISED		

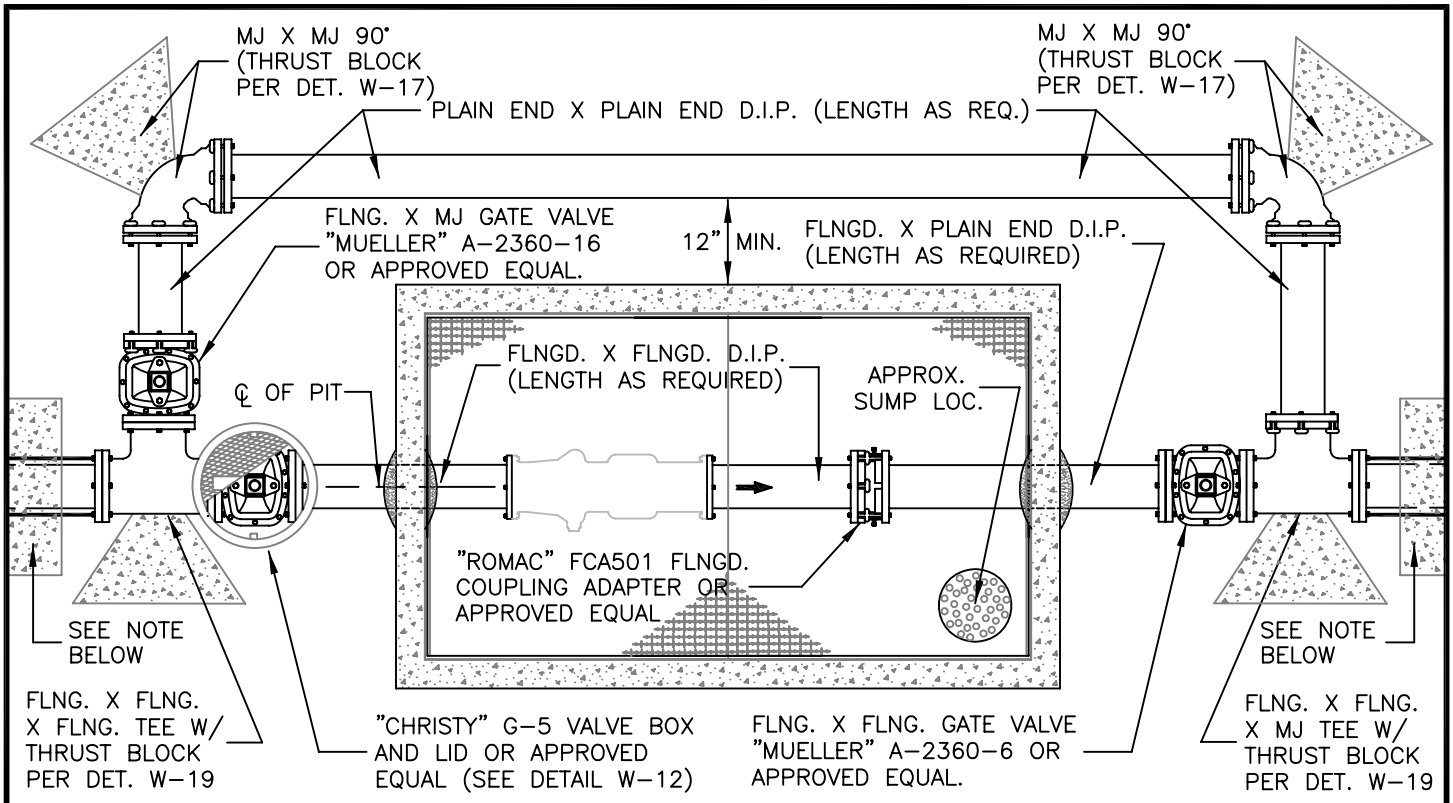
LEGEND

1. FINISHED GRADE.
2. SERVICE SIZE GALVANIZED STEEL PIPE FROM WATER METER.
3. REDUCED PRESSURE BACKFLOW PREVENTER FEBCO 825Y (OR APPROVED EQUAL) FOR SIZES 1" TO 2" AND FEBCO 825 YD (OR APPROVED EQUAL) FOR SIZES 2 1/2" TO 4".
4. ADJUSTABLE PIPE SADDLE SUPPORT, GALVANIZED STEEL, SUITABLE FOR SUPPORTING GENERAL PIPNG 4" AND LARGER, FROM FLOOR (12" MIN. AND 18" MAX. DISTANCE FROM BOTTOM OF DEVICE TO FLOOR).
5. 6" CONCRETE ENCLOSURE PAD, SIZE AS SHOWN ON THE PLAN.
6. SERVICE SIZE GALVANIZED STEEL PIPE RISER WITH A MINIMUM OF TWO (2) UNIONS FOR THREADED CONNECTIONS.
7. 90° ELBOW, FLANGED OR THREADED.
8. CONCRETE THRUST BLOCK (SEE DETAIL W-17 FOR MINIMUM THRUST BLOCK DIMENSIONS.)
9. WATER SERVICE BY OTHERS PER DTL. W-1
10. DOUBLE DETECTOR CHECK VALVE ASSEMBLY TO BE FEBCO 806 YD OR APPROVED EQUAL
11. VALVES TO BE MUELLER O.S & Y.A-2473-6 OR APPROVED EQUAL, CHAINED AND LOCKED WITH "KNOX BOX" TYPE LOCK, AND TAMPER SWITCH.
12. ALL PIPE SHALL BE DUCTILE IRON PIPE (D.I.P), AND ALL FITTINGS SHALL BE FLANGED.
13. FIRE DEPARTMENT CONNECTION, F.D.C., SHALL BE 4" RISER X 2.5" X 2.5" SIAMESE CONNECTIONS AND STRAIGHT WAY CHECK VALVE, ("KWIK-CHECK" OR APPROVED EQUAL), WITH METAL CAPS. WHEN THE F.D.C. SERVES ON-SITE FIRE HYDRANTS, THE ASSEMBLY SHALL BE 6" MINIMUM (RISER) x 2.5" x 2.5" x 2.5" x 2.5" (CONNECTIONS). LOCATION OF F.D.C. RISER TO BE NO MORE THAN 40' FROM THE NEAREST FIRE HYDRANT. CONTRACTOR MAY BE REQUIRED TO INSTALL A NEW HYDRANT IF THE ABOVE ABOVE REQUIREMENT CANNOT BE MET. LOCATION OF BYPASS CONNECTION SHALL BE MADE BEHIND THE THE DEVICE (DOWN-STREAM SIDE).
14. TYPE OF PIPE FROM THIS POINT INWARD, PER APPROVED PLAN.

NOTES:

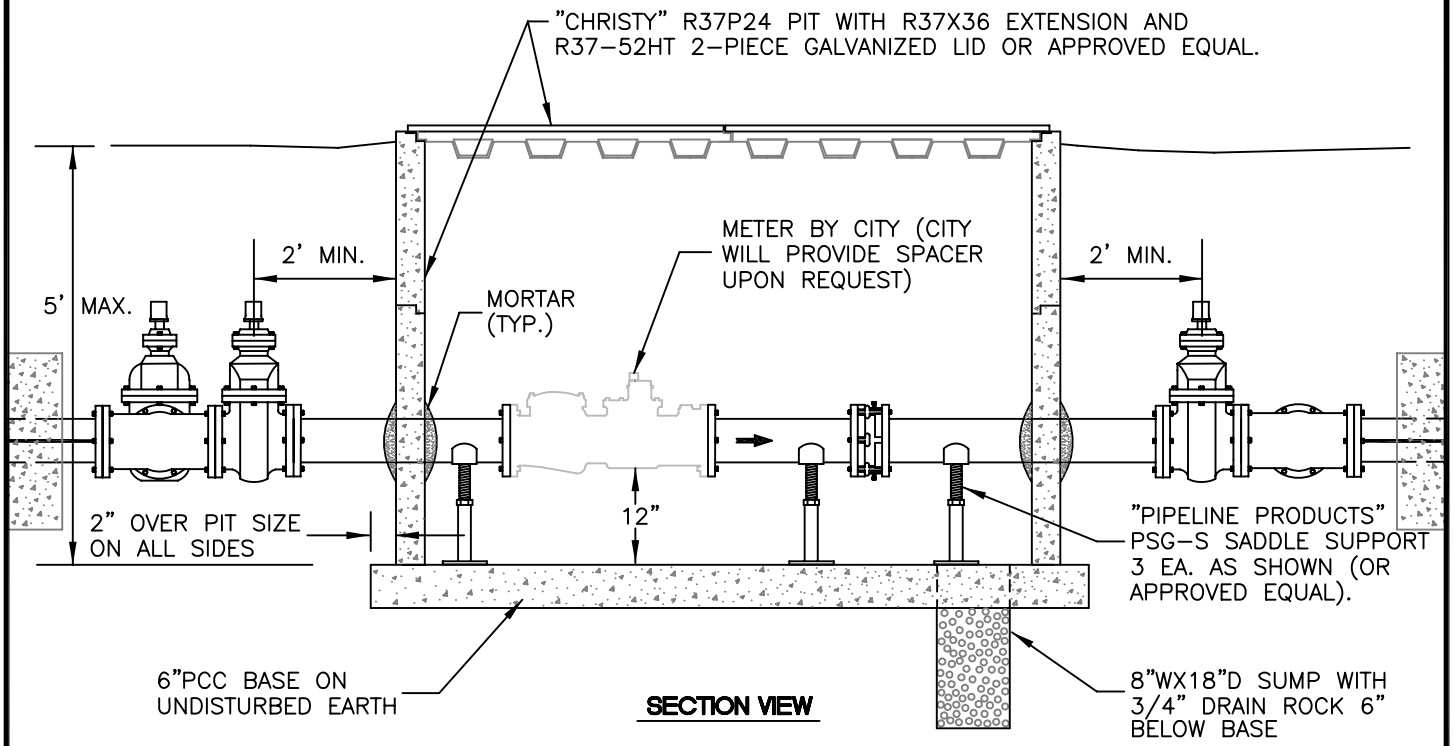
1. GATE VALVES AND TEST COCKS ARE REQUIRED.
2. WATER SUPPLY- NO CONNECTIONS OR TEES WILL BE ALLOWED BETWEEN THE WATER METER AND BACKFLOW UNIT.
3. PROTECTION FROM FREEZE DAMAGE MAY BE REQUIRED IN EXPOSED AREAS.
4. DEVICE MUST BE ACCESSIBLE FOR TESTING AND MAINTENANCE.
5. WRAP BURIED GALVANIZED PIPE WITH 10 MIL PVC TAPE.
6. ASSEMBLY MUST BE TESTED BY A TESTER APPROVED BY THE CITY OF MORGAN HILL. THE CITY APPROVED TESTER LIST CAN BE OBTAINED BY CALLING 408-776-7333.
7. ASSEMBLY MUST BE LOCATED ABOVE GROUND AND DIRECTLY BEHIND WATER METER AS SHOWN ON DTL W-6 ,W-7 AND W-8.
8. ADDITIONAL INFORMATION MAY BE OBTAINED FROM M.H. ORDINANCE 647 NEW SERIES, ADOPTED OCT, 1993
9. ALL DEVICES MUST BE APPROVED BY THE "FOUNDATION FOR CROSS CONNECTION AND HYDRAULIC RESEARCH".

City of Morgan Hill Public Works Department	BACKFLOW PREVENTION LEGEND & NOTES	DRAWING NO. W-10
Jim Ashcraft CITY ENGINEER 4/1/96 DATE 3/15/07 REVISED		



NOTE: REVERSE ANCHOR THRUST BLOCKS SHALL BE INSTALLED AT EACH END OF THE ASSEMBLY PRIOR TO AND JUST AFTER BYPASS PIPING AS SHOWN. REVERSE ANCHOR THRUST BLOCKS NOT SHOWN IN ENTIRETY, SEE DETAIL W-20 FOR THRUST BLOCK AND ANCHOR INFORMATION.

PLAN VIEW



SECTION VIEW

City of Morgan Hill
Public Works Department

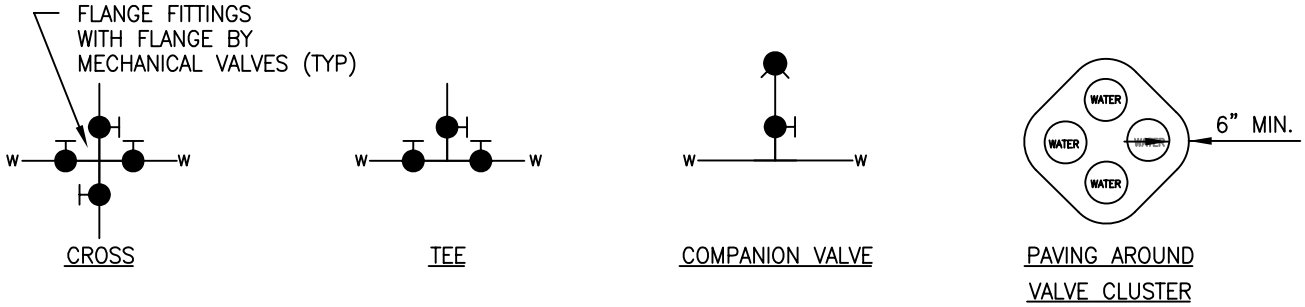
Jim Ashcraft
CITY ENGINEER

4/1/96
DATE

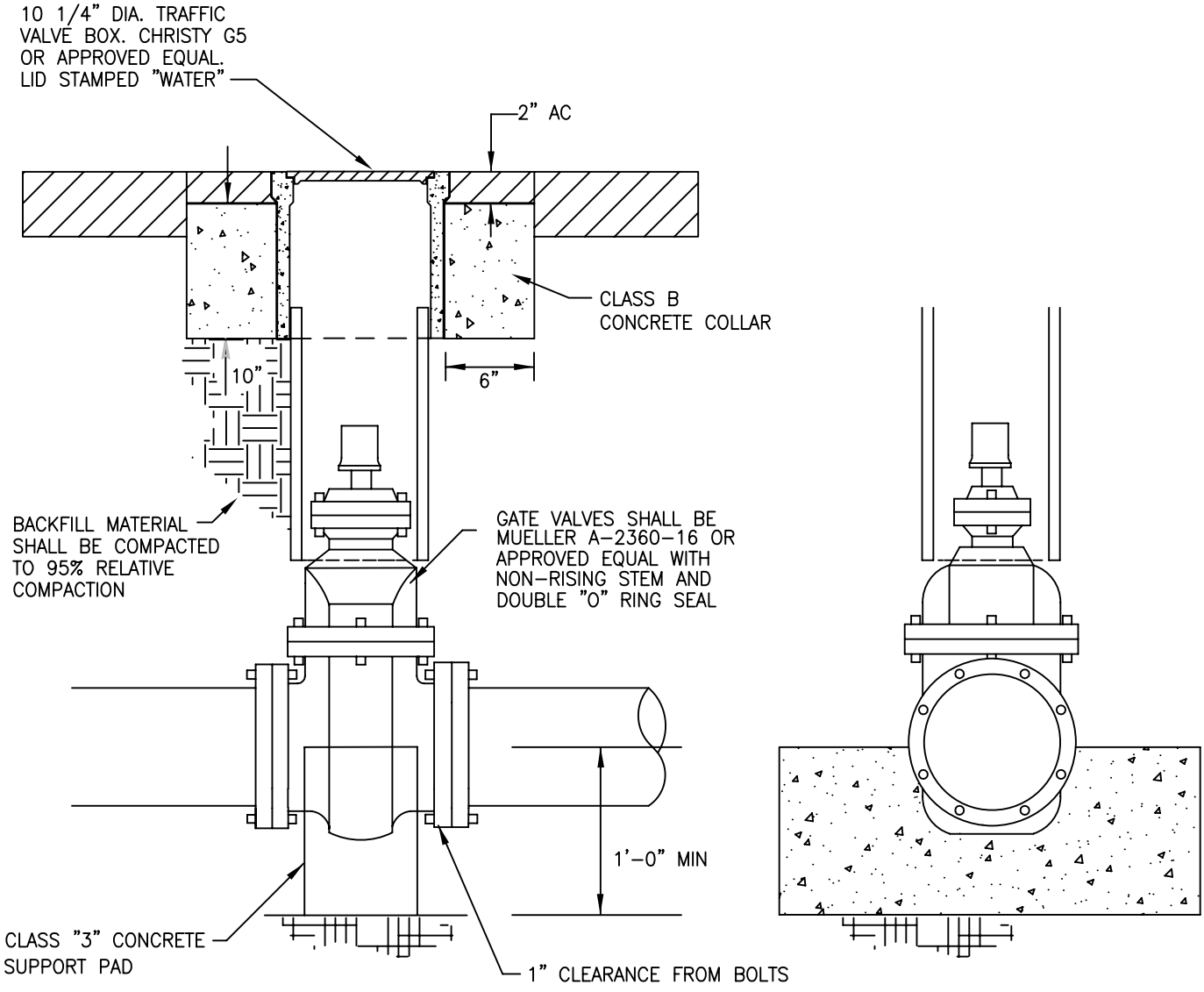
3/15/07
REVISED

METER INSTALLATION & BYPASS (FOR 4" THRU 8" DOMESTIC WATER SERVICES)

DRAWING NO.
W-11

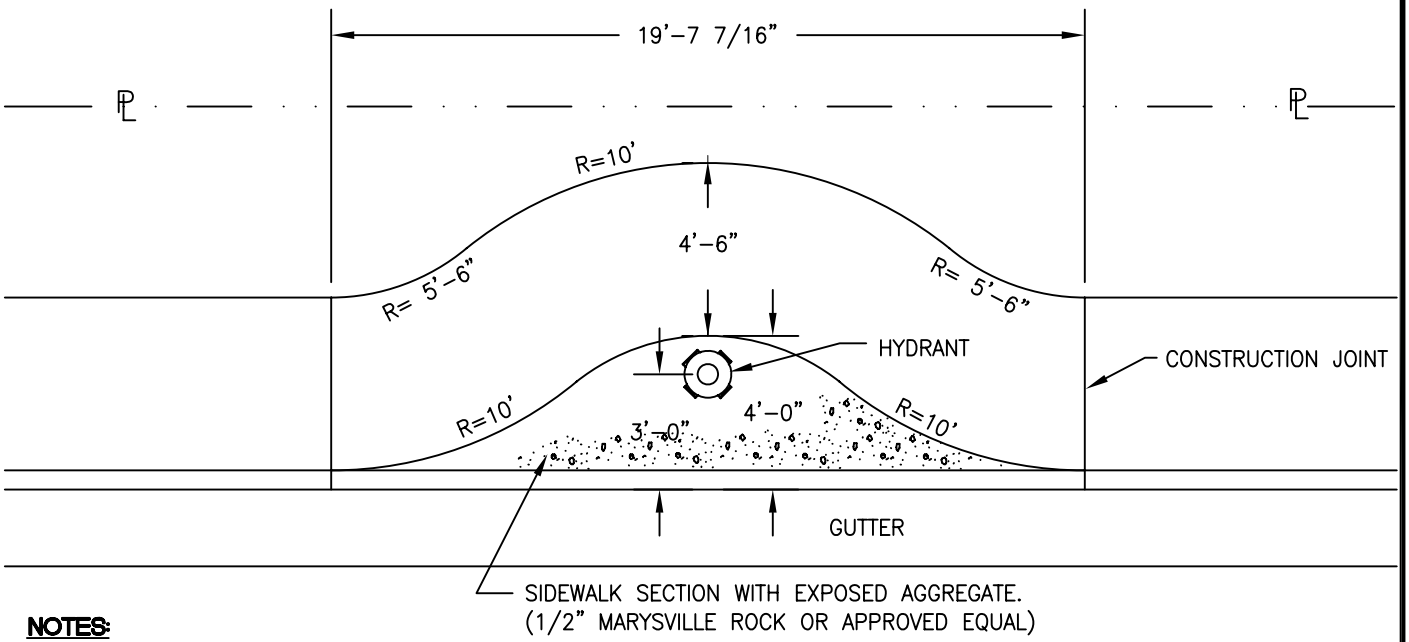


VALVE CONFIGURATIONS



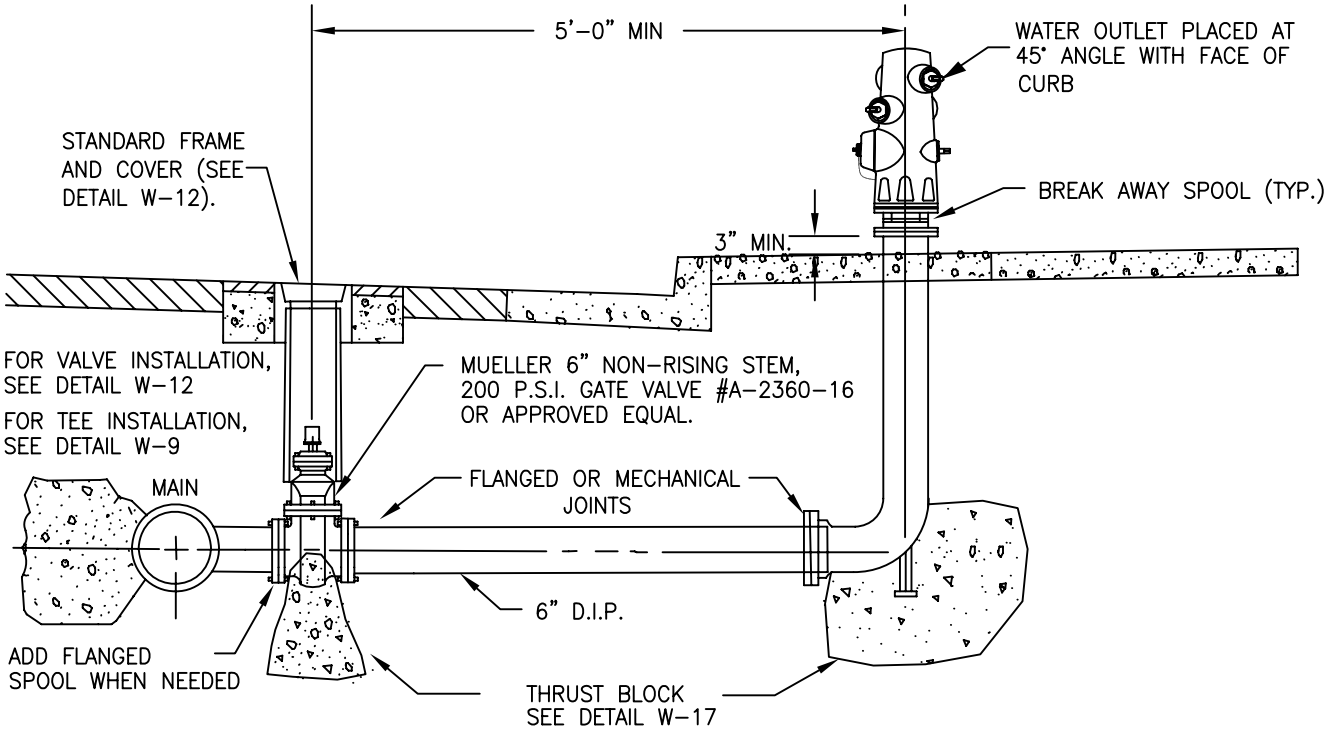
VALVES LARGER THAN 12" REQUIRE SPECIAL DETAILS AND SHALL BE APPROVED BY THE CITY ENGINEER.

City of Morgan Hill Public Works Department Jim Ashcraft CITY ENGINEER — 4/1/96 DATE — 3/15/07 REVISED	TYPICAL VALVE INSTALLATION	DRAWING NO. W-12

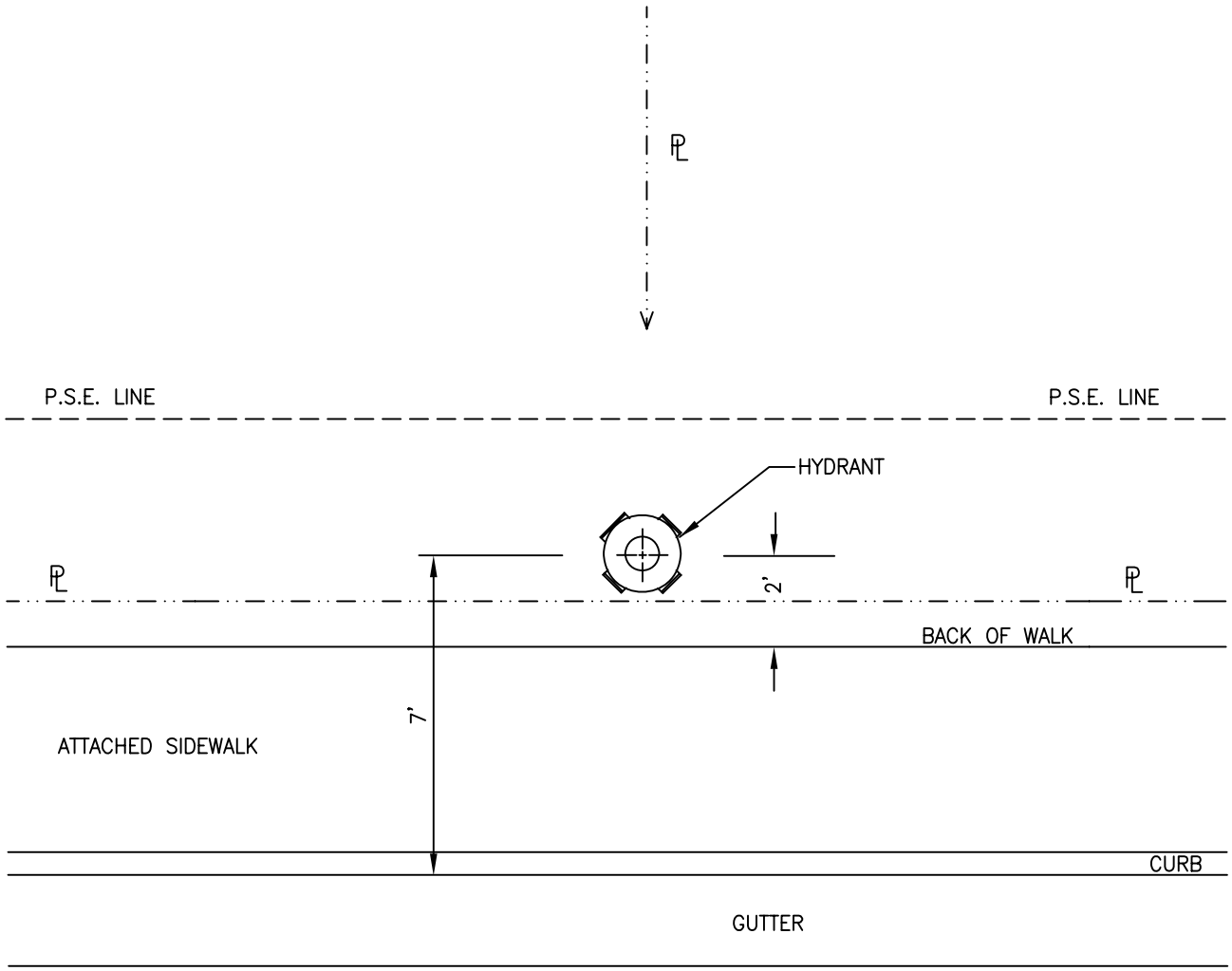


NOTES:

1. FOR COMMERCIAL / INDUSRTIAL APLLICATIONS ONLY, PAINT CURB RED 15' ON BOTH SIDES OF HYDRANT.
2. PLACE BLUE PAVEMENT MARKER IN STREET DIRECTLY ACROSS FROM HYDRANT, SEE DETAIL W-16.
3. HYDRANTS: RESIDENTIAL CLOW VALVE CO. #950 WITH 1-2 1/2" AND 1-4 1/2" OUTLET OR APPROVED EQUAL. PAINTED WITH FINISH YELLOW.
   INDUSTRIAL CLOW VALVE CO. #960 WITH 2-2 1/2" AND 1-4 1/2" OUTLET OR APPROVED EQUAL. PAINTED WITH FINISH YELLOW.
4. CENTER OF HYDRANT TO FACE OF CURB SHALL BE 3' FOR ATTACHED SIDEWALKS WITH MEANDER AND DETACHED SIDEWALK CONFIGURATIONS (ATTCHED SIDEWALK WITH MEANDER SHOWN). FOR ATTACHED SIDEWALK WITHOUT SIDEWALK MEANDER SEE DETAIL W-14.
5. JOINT TRENCHES LOCATED BEHIND SIDEWALK SHALL FOLLOW MEANDER AROUND FIRE HYDRANT.



City of Morgan Hill Public Works Department			HYDRANT INSTALLATION AND LOCATION (with SIDEWALK MEANDER)	DRAWING NO.
CITY ENGINEER	4/1/96 DATE	3/15/07 REVISED		W-13

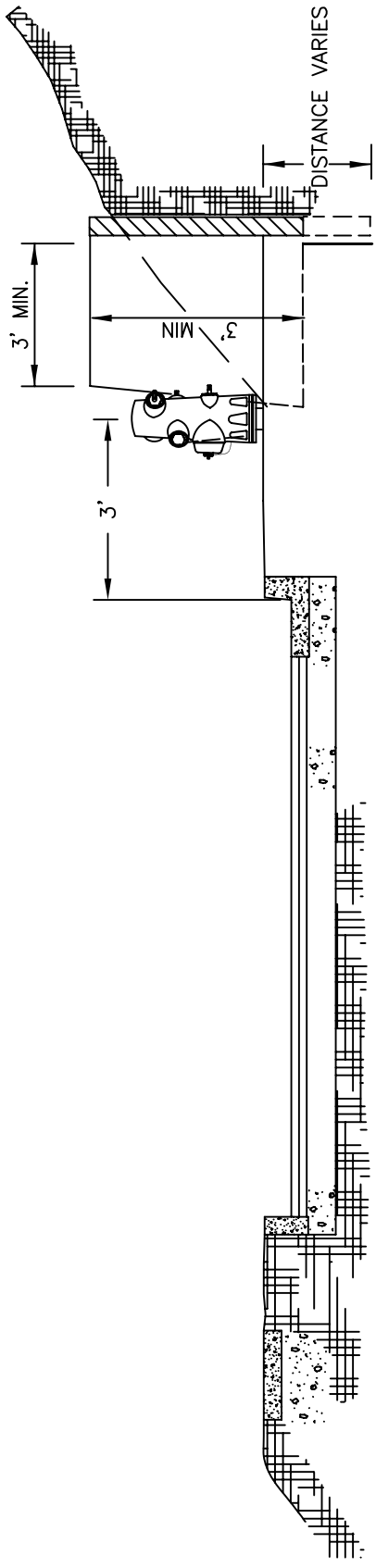


ATTACHED SIDEWALK
(WITHOUT SIDEWALK MEANDER)

NOTES:

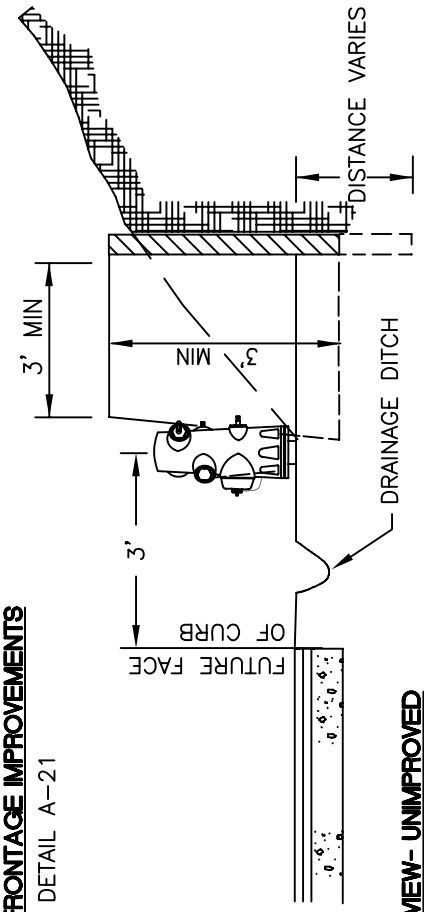
1. SEE DETAIL W–13 "HYDRANT INSTALLATION AND LOCATION", DETAIL W–12 "TYPICAL VALVE INSTALLATION", AND W–17 " ELBOW THRUST BLOCK".
2. CENTER OF HYDRANT TO FACE OF CURB SHALL BE 7' FOR THIS SIDEWALK APPLICATION.
3. CURB SHALL NOT BE PAINTED FOR THIS APPLICATION. PAINTED CURBS ARE NOT REQUIRED FOR RESIDENTIAL APPLICATIONS.
4. PLACE BLUE PAVEMENT MARKER IN STREET DIRECTLY ACROSS FROM HYDRANT, SEE DETAIL W–16.
5. FOR ADDITIONAL NOTES SEE DETAIL W–13.

City of Morgan Hill Public Works Department	HYDRANT LOCATION ATTACHED SIDEWALK (without) SIDEWALK MEANDER	DRAWING NO. W–14
Jim Ashcraft CITY ENGINEER — 6/8/00 DATE — 8/5/06 REVISED		

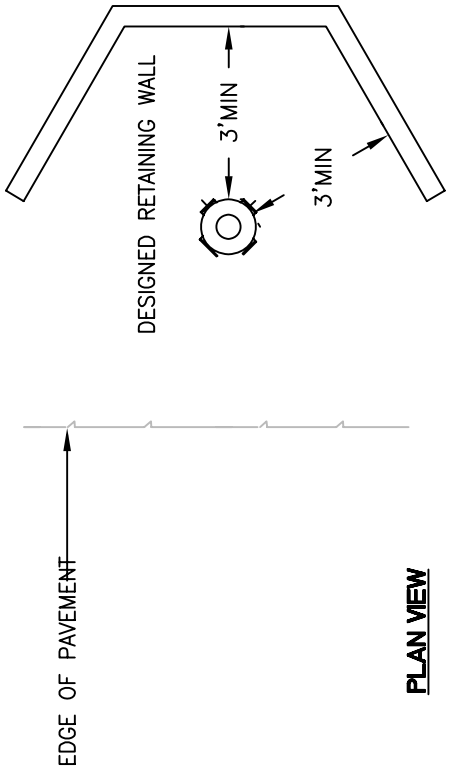


SECTION VIEW- FRONTAGE IMPROVEMENTS

SEE DETAIL A-21



SECTION VIEW- UNIMPROVED



PLAN VIEW

City of Morgan Hill
Public Works Department

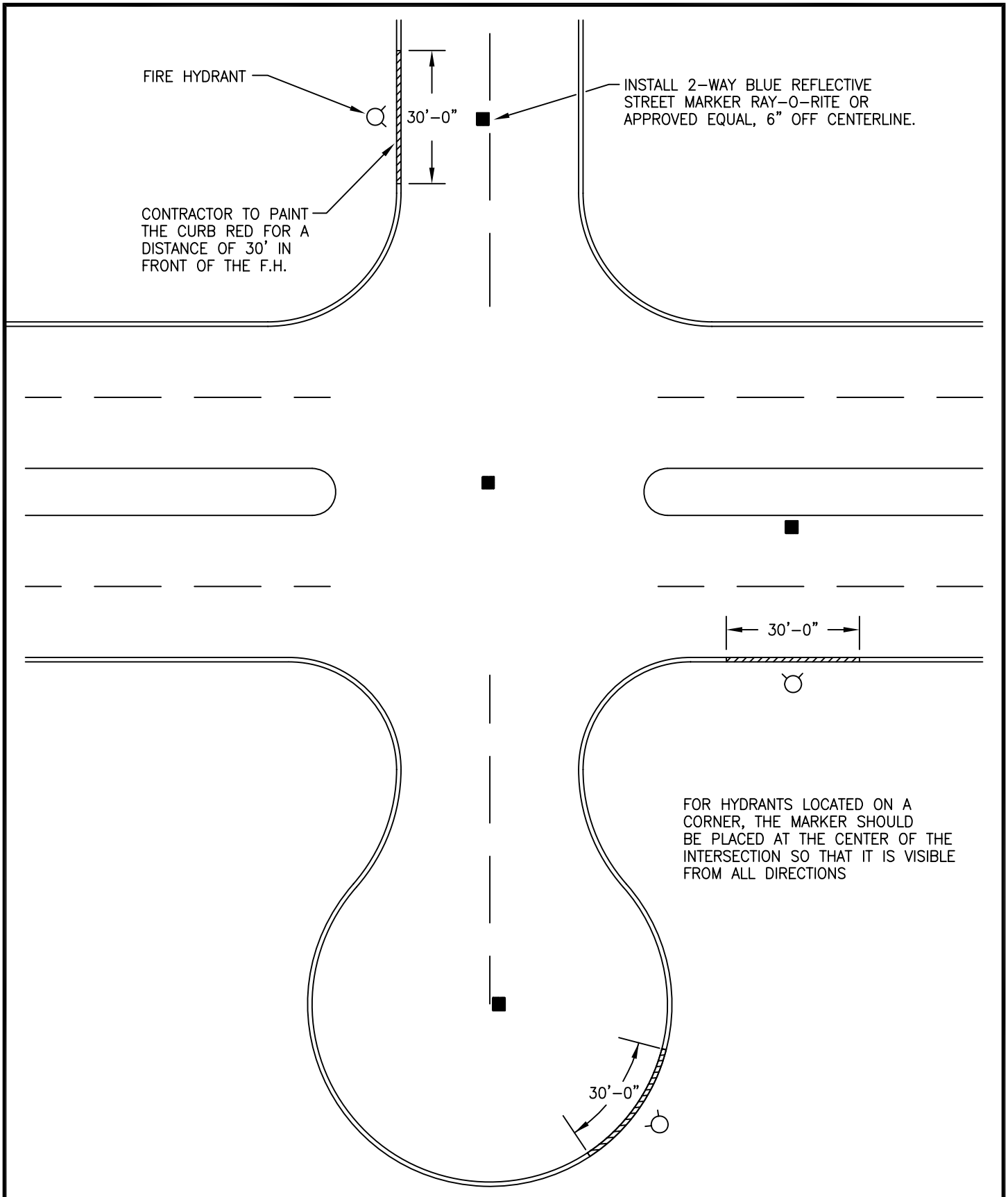
Jim Ashcraft
CITY ENGINEER

4/1/96
DATE

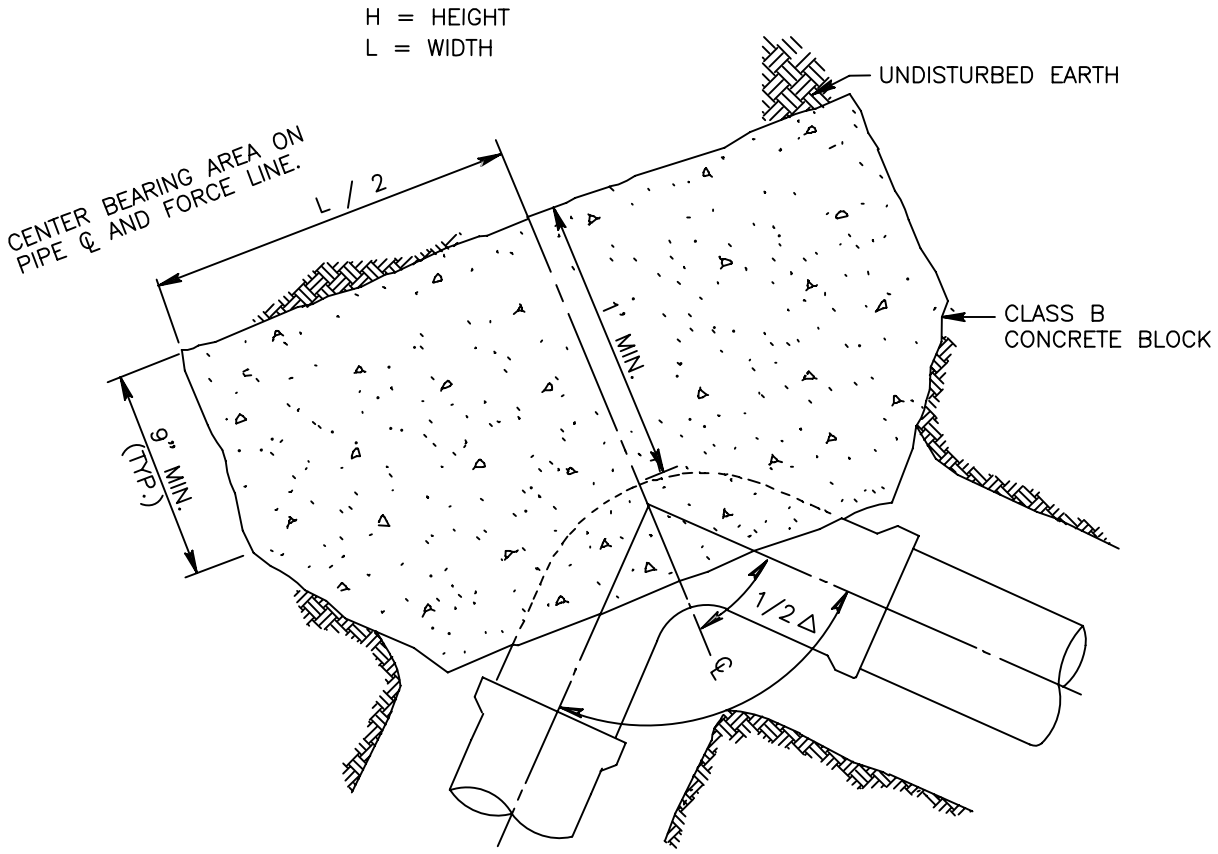
REVISED

HILLSIDE
FIRE HYDRANT LOCATION

DRAWING NO.
W-15



City of Morgan Hill Public Works Department	FIRE HYDRANT LOCATION MARKER	DRAWING NO. W–16
CITY ENGINEER — 4/1/96 DATE — REVISED		



NOTES:

1. CONCRETE SHALL BE KEPT CLEAR OF FLANGES, NUTS, AND BOLTS.
2. CENTER OF H COINCIDES WITH CENTERLINE OF PIPE.
3. "MEGA–LUG" (OR APPROVED EQUAL) TYPE GLANDS AND FASTENERS MAY BE USED BUT SHALL NOT BE USED AS A REPLACEMENT FOR THE USE OF THRUST BLOCKS.

PIPE SIZE	DIMENSIONS – L x H (200 PSI TEST)			
	11 1/4°	22 1/2°	45°	90°
4"–6"	1'0" x 1'0"	1'5" x 1'5"	1'9" x 1'9"	2'3" x 2'3"
8"	1'0" x 1'0"	1'5" x 1'5"	2'0" x 2'0"	2'10" x 2'10"
10"	1'5" x 1'5"	2'0" x 2'0"	2'8" x 2'8"	3'5" x 3'5"
12"	1'9" x 1'9"	2'3" x 2'3"	3'0" x 3'0"	4'2" x 4'2"
14"	1'9" x 1'9"	2'8" x 2'8"	3'6" x 3'6"	4'10" x 4'10"
16"	2'0" x 2'0"	2'10" x 2'10"	4'0" x 4'0"	5'5" x 5'5"
18"	3'0" x 3'0"	4'0" x 4'0"	5'0" x 5'0"	6'6" x 6'6"

City of Morgan Hill
Public Works Department

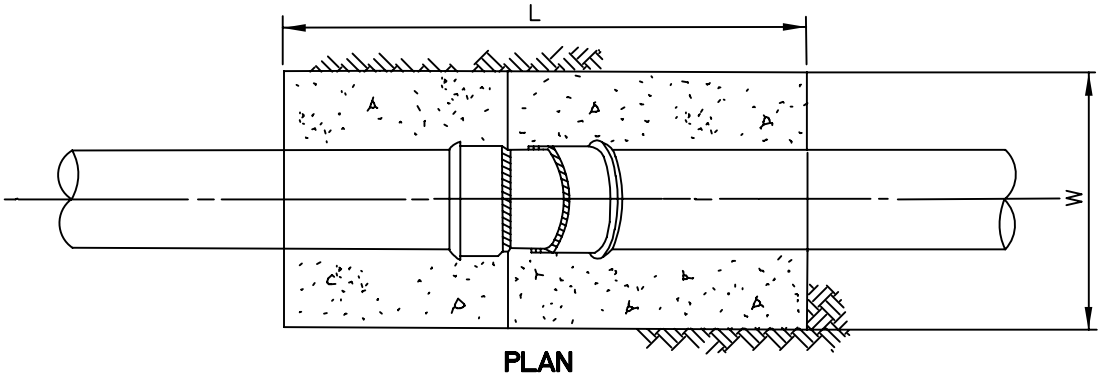
Jim Ashcraft
CITY ENGINEER

4/1/96
DATE

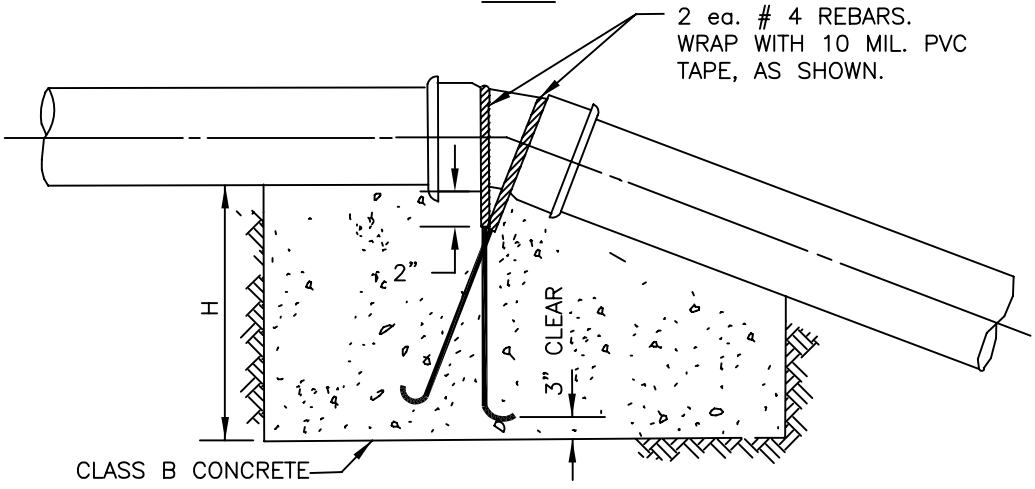
REVISED

ELBOW THRUST BLOCK HORIZONTAL AND DOWNWARD THRUSTS

DRAWING NO.
W–17



PLAN



ELEVATION

NOTES:
1. CONCRETE SHALL BE KEPT CLEAR OF FLANGES, NUTS & BOLTS.
2. "MEGA–LUG" (OR APPROVED EQUAL) TYPE GLANDS AND FASTENERS MAY BE USED BUT SHALL NOT BE USED AS A REPLACEMENT FOR THE USE OF THRUST BLOCKS.

DIMENSIONS (150 PSI TEST)

PIPE SIZE	11 1/4° BEND			22 1/2° BEND			45° BEND		
	L	W	H	L	W	H	L	W	H
6"	2'0"	2'0"	1'0"	2'0"	2'0"	2'0"	2'0"	2'0"	2'0"
8"	2'0"	2'0"	1'0"	2'0"	3'0"	2'0"	2'0"	4'0"	2'0"
10"	2'0"	3'0"	2'0"	2'0"	4'0"	2'0"	2'0"	4'0"	3'0"
12"	2'0"	3'0"	2'0"	2'0"	6'0"	2'0"	2'0"	6'6"	3'0"
18"	3'0"	3'0"	3'0"	3'0"	6'0"	3'0"	3'0"	5'0"	5'0"

City of Morgan Hill
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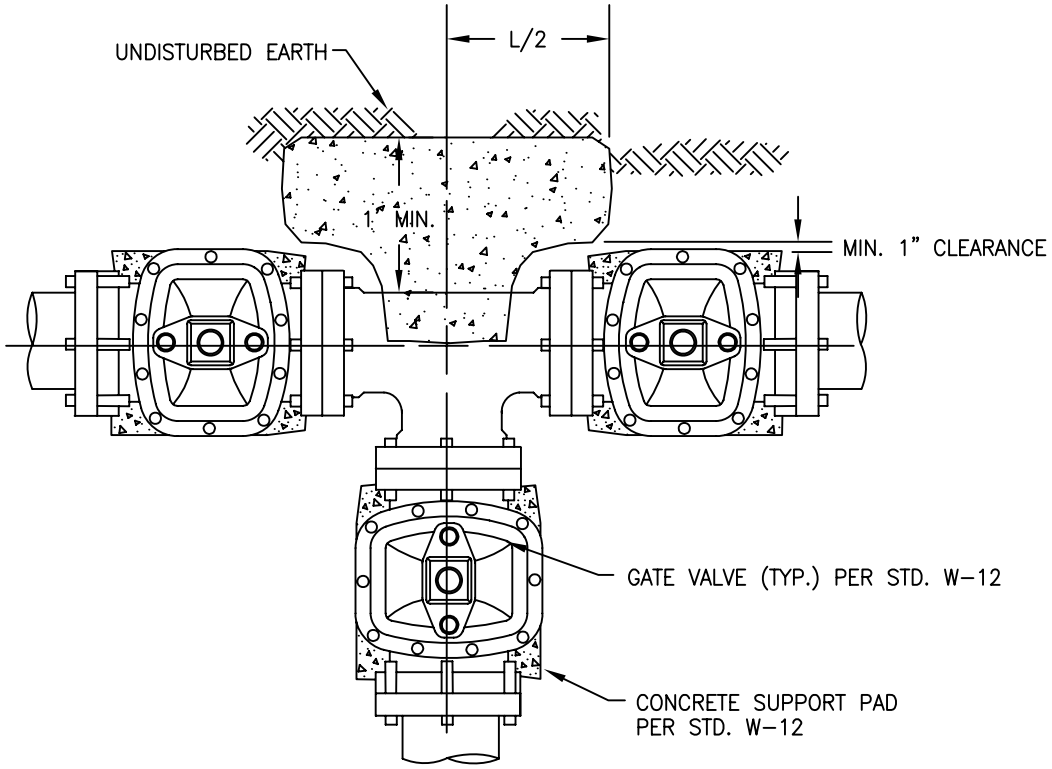
4/1/96
DATE

REVISED

ELBOW THRUST BLOCK UPWARD THRUST

DRAWING NO.
W–18



NOTES:

1. CONCRETE SHALL BE KEPT CLEAR OF FLANGES, NUTS, AND BOLTS.
2. "MEGA-LUG" (OR APPROVED EQUAL) TYPE GLANDS AND FASTENERS MAY BE USED BUT SHALL NOT BE USED AS A REPLACEMENT FOR THE USE OF THRUST BLOCKS.

BLOCKING FOR PIPE TEES		
PIPE SIZE	BEARING (SQ. FT.)	L X H
6"	3	1'-9"X1'-9"
8"	5	2'-3"X2'-3"
10"	9	3'-0"X3'-0"
12"	12	3'-5"X3'-5"
10"	16	4'-0"X4'-0"
12"	21	4'-7"X4'-7"

City of Morgan Hill
Public Works Department

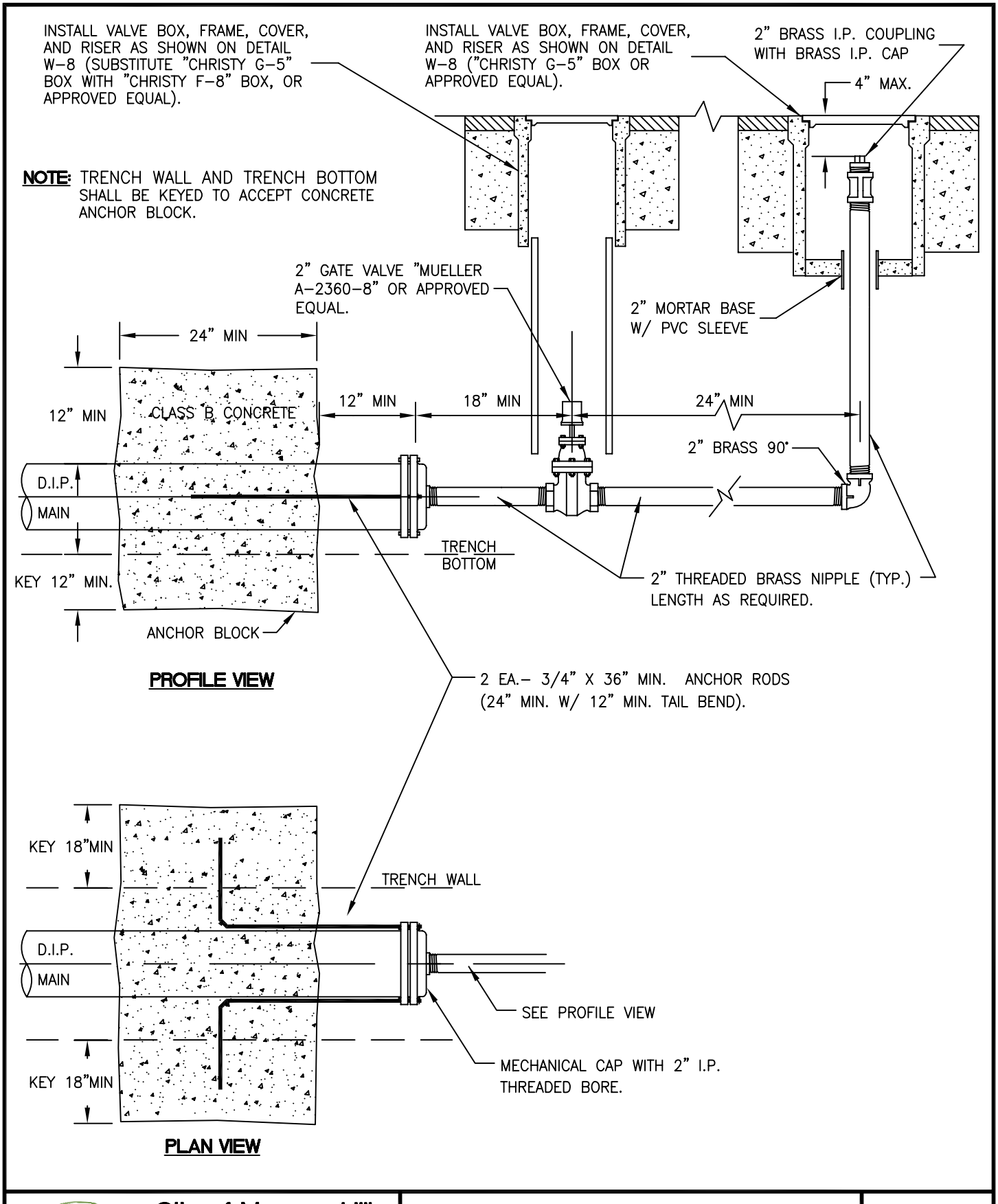
Jim Ashcraft
CITY ENGINEER

4/1/96
DATE

REVISED

TEE THRUST BLOCK

DRAWING NO.
W-19



City of Morgan Hill Public Works Department	BLOW OFF	DRAWING NO. W-20
CITY ENGINEER — 4/1/96 DATE — 3/15/07 REVISED		